

What is claimed is:

1. A method of preparing non-platinum composite electrocatalyst for a fuel  
5 cell cathode, comprising:
  - (1) preparing a carbon supporting titanium dioxide;
  - (2) compounding the carbon supporting titanium dioxide with a transition metal macrocyclic compound in an organic solvent to produce a carbon supporting titanium dioxide - transition metal macrocyclic compound  
10 comprising 0.1-5 g/L of macrocyclic compound; and
  - (3) thermal treating the resulting compound in step (2) at 100-1000°C to produce a composite catalyst.
2. The method as claimed in Claim 1, wherein the organic solvent in step (2) is N,N-dimethylformamide, dimethylsulfoxide, cyclohexane, acetone or  
15 anhydrous pyridine.
3. The method as claimed in Claim 1, wherein the center metal ion of the transition metal macrocyclic compound in step (2) is selected from a group consisting of iron, cobalt, manganese, copper and zinc.
4. The method as claimed in Claim 1, wherein the transition metal  
20 macrocyclic compound is selected from a group consisting of porphyrin, phthalocyanine, Schiff base, annulene and derivatives thereof.
5. The method as claimed in Claim 1, wherein the product obtained in step (3) contains 40 – 80% by weight of the active carbon, and wherein the mass ratio of the transition metal macrocyclic compound to titanium dioxide is 1-10 : 3-1.
- 25 6. The method as claimed in Claim 1, wherein the inert gas used in step (3) is argon or nitrogen gas.
7. The method as claimed in Claim 1, wherein the step (1) comprising the following substeps:
  - (1) slowly adding tetrabutyl titanate into anhydrous alcohol while vigorously  
30 stirring at room temperature to obtain a homogeneous and transparent solution;

(2) adding nitric acid into a mixture of deionized water and anhydrous alcohol to obtain a solution (B); and

(3) slowly adding the solution (A) into the solution (B) while vigorously stirring to obtain a homogeneous and transparent sol.

5 8. A composite catalyst prepared by the method as claimed in claim 1.

10

15

20

25

30